THE MATURING OF SMART

Simulation and Modeling for Acquisition, Requirements and Training (SMART) is basically an initiative to use modeling and simulation (M&S) in an effective and efficient way to improve the process of modernizing the Army. Two years ago, the SMART concept was in its infancy. A year later, the vision for SMART was clearly articulated and the path for progress was paved.

Today, SMART is in its adolescence. We are exploring new partnerships, technologies, and ideas. SMART is working its way up the learning curve and, naturally, is experiencing some growing pains. Still, the discoveries and developments are exciting, and this momentum fuels a motivation to realize SMART's full potential. Several articles in this issue of *Army AL&T* showcase our progress. We look at the history of SMART as well as its future. We are now educating our U.S. Military Academy cadets about SMART and how it supports the Army's transformation.

SMART has taken root. There are many pockets and communities of varying levels of collaboration; efforts to develop practical applications for data and model reuse; organizations seeking to establish partnerships for technology and information exchanges; and research into incorporating the open standards, architecture, and protocols developed by industry. Here are some illustrative initiatives you will see in this issue. The Army Materiel Command's Research, Development and Engineering Center Federation is a project to integrate existing M&S resources for engineering design both horizontally and vertically throughout the geographically dispersed labs and centers. The Program Executive Officer for Intelligence, Electronic Warfare and Sensors plans to reuse data and integrate the cross-domain aspects of SMART to build the next generation Army Ground Integrated Target Identification System. The focus here is to design M&S for use in both the engineering designs and training simulators. In addition, the Program Executive Officer for Tactical Missiles is exploring the reuse of data between separate programs, Javelin and Follow-on-to-TOW. These are a few examples of the many initiatives to put the concepts of SMART into practice.

Given this remarkable progress in a relatively short period, SMART still has a ways to go to achieve its true vision. Our activities and efforts are not yet fully integrated throughout the Army or with other elements of DOD; nor is the SMART process yet seamless. A multiuse simulation support environment using a common standard for interoperable, integrated simulations remains to be defined. We need to develop common, reusable object representations, algorithms, and environments. We also need to establish a standard means for sharing and reuse, including registries, disciplined access to simulations, and universal awareness.

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As we continue to mature SMART, we seek to promote M&S as a medium for collaboration. This provides a means to ensure that the interests of all the stakeholders in the modernization process can be balanced. This enabler for breaking down organizational and cultural barriers will surely improve the systems we develop and operate.

In a collaborative environment, we are better able to expand the trade space for achieving our challenging transformation goals. Systems will be evaluated in terms of capabilities. We will have multiple ways of looking at and solving problems. Management of the trade space will allow the balancing of the needs and responsibilities of all stakeholders. M&S allows the trade space to include concepts of operations, doctrine, system design, TTP (tactics, techniques, and procedures), system support, training, cost management, and human performance and feedback. SMART links capabilities and stakeholders.

The Future Combat Systems will use M&S to expand the trade space and build "system-of-systems" capabilities. An article on Page 22 of this issue looks at the daunting challenges of exploring "Big Ideas" in the synthesis of concepts and technology.

Finally, as we continue to develop and realize the SMART vision, we need to keep focused on the next steps. We must begin to identify the means to measure the effectiveness of SMART. We must ask, "How do we know how well we are doing?" To do so, we need to develop two different, yet complementary, types of measures to evaluate our progress. Outcome-based measures will address aspects such as lower total-ownership costs, shorter time to field, increased operational capabilities, and the ability to simultaneously train and field systems. Process-based measures will address areas such as multiple uses of models and simulations, the extent of collaboration, and the ability to plan for and achieve an in-depth understanding of the principles of the return on investment for SMART.

Our goal is to be a world leader in M&S. We must provide a high return on investment by creating a disciplined, collaborative environment that eliminates barriers and ensures that all stakeholders in the modernization process have a voice. It is imperative that we succeed for many reasons, but especially to continually improve our ability to get affordable, leading-edge capabilities for our soldiers.

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